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A Case Study of Anterior Cruciate Ligament Injury of Knee Joint with *Haridra Pinda Pottali Sweda* with *Vishagarbha Taila Pichu*

Amala J. Tharesa[1], Srinivas Masalekar[2]

[1]*Final Year Post Graduate Scholar, Department of Shalya Tantra, Govt. Ayurveda Medical College, Bengaluru, Karnataka, India.*

[2]*Associate Professor, Department of Shalya Tantra, Govt. Ayurveda Medical College, Bengaluru, Karnataka, India.*

ABSTRACT

The knee joint is the largest and arguably the most stressed joint in the body. It is a Synovial joint that connects three bones femur, tibia and Patella. It is a complex hinge joint composed of two articulations: The tibiofemoral joint and Patellofemoral joint. Knee ligaments are injured most often from indirect, twisting or bending forces on the knee or often rotational movements of the knee joint. The anterior cruciate ligament is considered as the primary passive restraint to anterior translation of the tibia on the femur and it provides rational stability to the knee joint in both frontal and transverse planes. ACL injuries happen during sports and fitness activities that can put stress on the knee. In conventional system the treatment methods include exercise, braces, lifestyle modifications and surgical management including graft fixation. The complications of surgical methods include post-operative stiffness pain on kneeling etc. Ayurvedic interventions show clinically significant improvements in traumatic and degenerative pathologies with special mention to delaying osteoarthritis onset. *Haridra Pottali Pinda Sweda* and *Visha Garbha Taila* used in this case study are very effective in reducing inflammation and to heal arthritic aches and pains.

Key words: *Anterior Cruciate Ligament Injury, Haridra Pottali Pinda Sweda, Visha Garbha Taila Pichu*

INTRODUCTION

The ACL is comprised of two bundles which are named for their relative insertion sites on the tibia: anteromedial (AM) and posterolateral (PL). Along the lateral wall of the intercondylar notch, two prominent osseous ridges mark the borders of the femoral ACL insertion site: the lateral intercondylar ridge demarcates the anterior border of the ACL, while the lateral bifurcate ridge, running perpendicular to the lateral intercondylar ridge, separates the femoral attachment sites of the two bundles. The AM bundle is nearly isometric, with a tendency toward slightly more tension during flexion than in extension. Due to this quality, the AM bundle is considered the centre of ACL rotation. The PL bundle is lax in flexion and becomes taught during the end range of extension (from 15° of flexion to 0°). This relationship allows the AM bundle to provide both rotational and translational (sagittal plane) stability, whereas the PL bundle provides more rotational stability.

Cruciate ligament injuries occur singly or in combination with damage to other structures. ACL is the more commonly affected. There are three main ACL injury mechanisms: direct contact, indirect contact, and noncontact. Direct contact injuries are sustained when a person or object strikes the knee directly. Indirect contact injuries occur when a person or object strikes a part of the body other than the knee itself, causing excessive forces to be transferred through the knee (such as a direct blow the thigh,

Address for correspondence:
Dr. Amala J. Tharesa
Final Year Post Graduate Scholar, Department of Shalya Tantra, Govt. Ayurveda Medical College, Bengaluru, Karnataka, India.
E-mail: ammujoy92@gmail.com

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ISSN: 2456-3110 CASE REPORT November 2022

translating the femur posterior in respect to the tibia), resulting in ACL failure. Noncontact injuries are sustained when a deceleration or change in direction (pivot) force are applied to the knee but often encompass an ill-timed neuromuscular firing of structures around the knee, causing translation of the tibia on the femur, which results in ACL failure. Noncontact mechanisms account for 60%-70% of ACL injuries. With the increasing sporting activates injuries to knee especially on ligaments are on the increase. Irregular exercises i.e., person indulges in exercise discontinues it for a short period then restarts, are more prone to have ligament injury.

Partial tears of the anterior cruciate ligament are rare. Most ACL injuries are complete or near complete tears. Injured ligaments are considered sprains and are graded on severity scale. In Grade 1 Sprain the ligament is mildly damaged and slightly been stretched, but still able to keep the knee joint stable. In Grade 2 Sprain the ligament is stretched to the point where it becomes loose and it is referred to as a partial tear of the ligament. Grade 3 Sprain is commonly referred to as a complete tear of the ligament. The ligament has been split into two pieces and the knee joint is unstable. Clinical features of ACL injury include pain with swelling, loss of full range of motion, tenderness along the joint line, discomfort while walking.

Investigations include plain X ray, which will be normal in most of the cases, MRI and arthroscopy. Management includes non-surgical and surgical methods. Non-surgical treatment includes exercise and braces. Conservative managements include knee immobilisation in cylinder cast or Robert jones bandage for a period of 3-6 weeks and is found to be good for Grade 1 and Grade 11. For Grade 111 mainly Ligament repair is done.

In the present study Ayurvedic treatment modalities like *Haridra Pottali Pinda Sweda* and *Visha Garbha Taila Pichu* are selected for the management of the pain swelling and instability of knee joint.

CASE REPORT

A 22 year old female with complaints of pain, occasional swelling and painful flexion of the Right knee joint since 2 years. History of present illness revealed that patient was apparently normal 2yrs ago. One day while practicing some sport activity patient had a fall on outstretched right knee. Since then, patient had severe pain which was associated with swelling and restricted movements. Pain aggravated on strain. So, for the same patient consulted some orthopaedic surgeon and he prescribed some analgesics and advised with some exercises. Later after one year again patient started getting the similar kind of pain and associated swelling occasionally and was advised for surgery for the same. So, to avoid surgery patient got admitted in GAMC Bengaluru.

General Examination

Built - Medium

Pallor - Absent

Temperature - 98.4°F

Pulse rate - 70/min

Weight - 72kg

BP - 110/70 mm of Hg

Respiratory Rate - 16/mins

Examination of Right Knee joint

Restriction of movement of knee joint

Anterior drawer test : +

Lachmann's test : +

Pain : Diffuse

Tenderness : present

Crepitus : Present

Localised swelling : Present

Gait : Limping

Investigations done : MRI

Impression : Complete tear of anterior cruciate ligament, Mild synovial effusion in the knee joint.

Differential diagnosis

Sandhi Gata Vata: Disease manifested in knee joint. Excluded as there was h/o trauma in the history.

ISSN: 2456-3110 CASE REPORT November 2022

Janusandhi Marma Kshata : H/o trauma, manifestation in *Janusandhi Marma*, acute onset, Examinations and MRI suggested *Marma Kshata*.[1]

Internal Medications

1) *Rasnaerandadi Kashaya*: 60 ml BD Before food
2) *Lakshadi Guggulu*: 2-0-2 with Kashaya
3) *Goksuradi Guggulu*: 1-0-1 After food

External Medications

1) *Abhyanga* with *Murivenna* for 7 days
2) *Visha Garbha Taila Pichu* for 7 days
3) *Haridra Pottali Pinda Sweda* for 7 days

Ingredients of *Murivenna Taila* (Ref - Yoga Grantham)

- *Kera Tailam* - coconut oil
- Juice of *Karanja* - *Pongamia glabra*
- *Tuka* - *Spermacoce articularis*
- *Tamboola* - *Piper betle*
- *Kumari* - *Aloe vera*
- *Shigru* - *Moringa oliefera*
- *Paribhadra* - *Erythrina variegata*
- *Palandu* - *Allium cepa*
- *Kanjika* - Fermented gruel
- Paste of *Shatavari* - *Asparagus racemosus*

Ingredients of *Visha Garbha Taila*[2]

- *Tila Taila* - Sesame oil
- *Dhattura Swarasa* - *Datura metal*
- *Kushta* - *Sassurea Lapa*
- *Vacha* - *Acorus calamus*
- *Dhatri* - *Embilica officinalis*
- *Maricha* - *Piper nigrum*
- *Visha* - *Aconitum ferox*
- *Dhattura* - *Datura metal*
- *Patu* - Rock salt

Ingredients of *Haridra Pottali Pinda Sweda*[3] (*Sukrithi*)

- *Haridra* - *Curcuma longa*
- *Sarja Rasa* - *Vateria indica*
- *Shatahwa* - *Anethum graveolens*
- Fried Paddy
- *Saindhava*
- Egg

Ingredients being mixed for *Pottali*

Adding of egg white for binding

Preparation of *Pottali*

ISSN: 2456-3110 CASE REPORT November 2022

***Pottali* procedure done over the posterior aspect of knee joint**

RESULTS

Signs and Symptoms	Before treatment	After 7 days of treatment	After 10 days of treatment	After 21 days of treatment
Pain	+++	++	+	-
Difficulty in walking	++	+	+	-
Restricted movement of Right Knee	+++	++	+	-
Tenderness	+	+	-	-

DISCUSSION

Anterior Cruciate Ligament injury can be taken as *Janu Sandhi Marma Kshata*. According to *Susrutha Acharya, Janu Sandhi* is a *Vaikalyakara Marma* and injury to this *Marma* causes *Khanjatha*. The pathogenesis of the disease is as follows: due to *Abhighata* there will be *Rasa Rakthadi Dhatu Dushti* and *Vata Prakopa* which leads to *Vikruthi* in *Asthi*, *Sandhi, Snayu, Kandara* and causes the symptoms.

Murivenna Taila is well known in reducing pain and helps in faster healing. The formulation has got a very significant anti-inflammatory activity in acute inflammation. Majority of the ingredients of *Visha Garbha Taila* are *Ushna Virya* and *Vata Shamaka*. Herbs used in this *Taila* have deep penetrating properties right into dermal layers soothing the nerves cells beneath skin resulting in relief of pain.

The ingredients of *Haridra Pottali Pinda Sweda* are *Haridra, Sarja, Shatahwa, Saindhava* and egg white as binding agent. Among the drugs *Haridra* is analgesic and have found effective in the treatment of sprain, it is a well-known anti-inflammatory drug. According to *Charaka Acharya, Shatahwa* can be used externally in rheumatic and other swellings and it is rejuvenating. *Sarja* is also one drug which can be used in Rheumatism and it is *Vedanasthapaka* in action. Therapeutic effects of heat are due to increased blood flow, increased metabolic activity, Stimulation of neural receptors in skin/ tissues and effect of heating on nerves.

CONCLUSION

The preliminary analysis of this observatory report indicates that suggested Ayurvedic treatment protocol is effective in knee ligament injuries, wherein it improves joint stability, reduces the symptoms of pain, swelling, stiffness and rehabilitates the individual towards his daily activities of strenuous/non strenuous origin. The effectiveness observed after the treatment phase sustained across the follow up period of 3 months as well. To substantiate the effectiveness of the prescribed Ayurvedic treatment protocol in decelerating the osteoarthritis onset in a traumatic knee injury requires long term follow-ups. Yet we have documented some positive leads from this report wherein Ayurvedic treatments may be adopted for effective and non-invasive rehabilitation of knee ligament injuries ranging from partial to complex origin and also in decelerating the risk of developing early osteoarthritis.

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